

LAKE/WATERSHED STEWARDSHIP PROGRAM

Lake and Pond Watershed Surveys and Action Plans



What is a Lake Watershed Survey?

It's a visual survey of a lake or pond and its watershed, designed to look for pollution. Trained volunteers look at:

- the lake or pond's shoreline,
- the corridors along the tributaries and the outlet stream,
- and the upland watershed area.



Watershed surveys lead to actions to protect and restore lakes and ponds and their watersheds. By identifying and reporting problems to municipal and state officials, by designing projects to enhance existing conditions, and by raising awareness of communities and individuals, groups are able to achieve milestones in

- restoring water quality
- identifying nonpoint source pollution
- protecting and restoring habitat

As part of their work to protect and restore lake watersheds, stewardship teams and lake watershed associations use watershed surveys to

- generate baseline data from field observations
- determine priorities
- create and implement an Action Plan for the watershed

How do a lake watershed survey and action plan help?

By organizing a citizen-led lake watershed survey, concerned lake or watershed associations are able to work towards finding the root causes of water quality problems. Through grassroots action planning based on the survey's findings, citizens implement actions to help restore lake water quality and improve watershed management.

Building Coalitions

Watershed surveys are excellent tools for building watershed constituencies and awareness. Watershed surveys work best when they both involve lake and stream advocates, unite people from adjacent towns and bring together town officials, citizens and businesses to form stewardship teams for watershed protection.

Identifying Nonpoint Source Pollution Problems

Citizens are trained to conduct visual surveys of the watershed's landscape, stream corridors and shorelines including land uses and habitat value. Surveyors record information about erosion problems, stormwater runoff, land disturbances, and other probable sources of nutrients and nonpoint source pollutants.

Action Planning

Residents meet with local and state officials to discuss their findings and brainstorm ways to address the problems identified and protect existing assets. This includes suggesting specific remedies called Best Management Practices (BMPs) for specific problems.

The Lake/Watershed Stewardship Program is a pilot project of the Massachusetts Riverways Programs of the Department of Fisheries, Wildlife and Environmental Law Enforcement (DFWELE) in collaboration with the Massachusetts Department of Environmental Protection (DEP). Partners include the Department of Environmental Management (DEM) Lakes and Ponds Program.

This project is modeled on Riverways' Adopt-a-Stream Program and Shoreline Surveys. Once the watershed surveys and action plans are complete, this information can be shared with town officials, watershed associations, EOEA Watershed Teams and state and federal agencies.

Case Study: Watershed Survey of the Indian Lake / Salisbury Pond Watershed

This case study, a description of strategies for a successful lake or pond watershed survey, is intended to stimulate ideas for other groups considering watershed surveys.

Case Study of a Watershed Survey

The Case Study describes a Lake Watershed Survey conducted on the Mill Brook Watershed, including Indian Lake and Salisbury Pond. Residents from the **Indian Lake Watershed Association, the Mill Brook Task Force, and the Blackstone Headwaters Coalition** completed the survey with materials and assistance from Riverways' Lake/Watershed Stewardship Program.

Indian Lake and Salisbury Pond in north Worcester are connected by the culverted Mill Brook and drain to the Blackstone River. Worcester residents from these area organizations are concerned about high levels of phosphorus and sediments entering the waterways which result in dense algae and excessive vegetation and other problems. Both Indian Lake and Salisbury Pond have remediation plans called Total Maximum Daily Loads (TMDLs) from Massachusetts DEP that call for reductions in phosphorous inputs and recommend watershed surveys to find the pathways phosphorous is taking to the water.

The Steering Committee

GETTING STARTED

Once the local organization's application had been approved by the **Lake/Watershed Stewardship Program**, these citizen groups organized into a steering committee with Riverways staff. The steering committee includes citizen groups, representatives from Worcester's Department of Public Works, MA DEP, EOE's Blackstone River Watershed Team Leader, and staff from their state representative's office. This committee planned and coordinated the entire survey and the follow-up action planning work.

DETERMINING PURPOSES FOR THE SURVEY

At its initial meeting the steering committee discussed related watershed protection issues and projects in north Worcester and reached consensus on the goals for the watershed survey. These goals included:

- discovering sources of nonpoint source pollution, particularly nutrients and sedimentation
- creating and implementing a plan designed to remediate identified / found problems
- fostering relationships among local organizations and developing better partnerships between these groups and state and local authorities

- building constituency and raising awareness about the lake and pond and their watershed

Outreach

PUBLICITY

Members of the steering committee wrote articles and contacted reporters to alert them to meetings and activities. There was press coverage throughout the process, announcing the time and locations of training workshops and events.

LANDOWNER NOTIFICATION

The steering committee mailed letters to residents and businesses in the watershed notifying them about the upcoming Watershed Survey. The letter invited their participation and gave them an opportunity to ask questions and raise concern about watershed surveyors crossing their property. Of the hundreds of people notified, no homeowners objected. Other groups have dropped notices at abutters' doors inviting their participation and providing a number to call with questions or concerns.

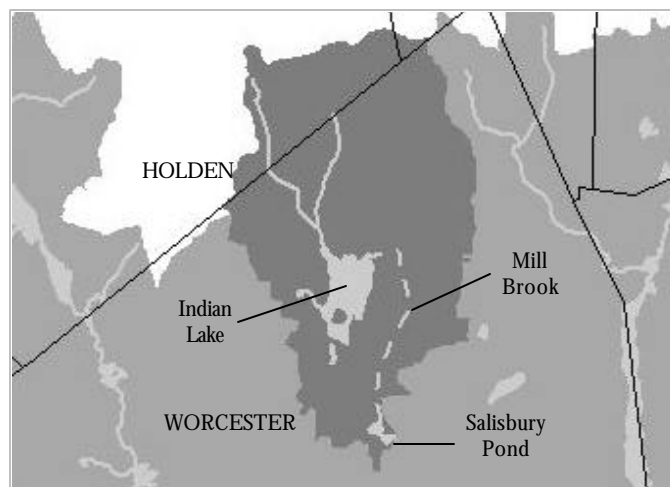
Survey Planning

MAPPING

A subcommittee of the steering committee met to choose the priority areas of the watershed, including land near the **lake and pond shorelines**, the stream corridors of the **tributaries** in the watershed, and the **upland area** of the drainage basin. From there, survey maps were made for all 13 sections at a scale large enough to let surveyors mark locations of problem pipes, significant erosion, habitat, places where photographs were taken, etc.

SURVEY TEAMS AND LEADERS

Each survey section was designed to require not more than a few hours work. Prior to watershed survey training, members of the steering committee and other volunteers agreed to be team leaders for



Mill Brook Watershed (Indian Lake, Mill Brook, and Salisbury Pond)

individual sections. Their duties included:

- taking a brief scouting trip of their section by car
- recruiting volunteers for their section
- organizing volunteers for their section at the survey training
- collecting completed data sheets to return to the program coordinator



Subcommittee of the Mill Brook steering committee reviews maps.

PREPARATION OF SURVEY KITS

Kits were prepared for each survey team containing:

- a survey section map with topographic information (USGS Quads) and watershed boundary
- *Surveying a Lake: Data Collection Forms*
- the date of the follow up meeting for reporting and setting priorities for future work.

Massachusetts DEP's new manual, *Surveying a Lake Watershed and Preparing an Action Plan* is available for leaders and volunteers.

Watershed Survey

SURVEY TRAINING WORKSHOP

The 25 people who attended the training session were prepared for their participation in the survey by:

- an interactive slide show presented by the Lake/Watershed Stewardship Program Coordinator. Surveyors discussed each slide in relation to a question in the data collection forms.
- orientation with their section's survey team leader, organizing who would survey which section, pairing up with survey partners

WATERSHED SURVEY - FIELD WORK

The field work - making observations using the data collection forms and taking photographs - was completed by the volunteers within three weeks of the training.

FOLLOW UP ACTION PLANNING

Each survey team assessed the results of their data sheets by completing a priority matrix. All watershed surveyors brought their information to share with the group at a follow up session. Reporting by survey section, surveyors described **problems** (discharging pipes, erosion, trash), **assets** (open space, habitat, good examples of stormwater management by residents and businesses), and determined **priorities** from among these two columns that need action.

Priority Matrix

Problems	Assets	Priorities
Segment 1 1) 2) 3)	1) 2)	1) 2) 3)
Segment 2 1) 2)	1) 2) 3) 4)	1)

ACTION PLANNING MEETING

The watershed surveyors gathered again for an action planning meeting. Joining them were representatives of key municipal boards and departments, including staff from the City Council, Conservation Commission, the Department of Public Works, as well as representatives from the Mayor's office and state representative's office.

This combination of knowledgeable residents and experienced municipal officials led to a highly productive and creative discussion of the survey's results and produced an excellent plan of action for the watershed.

The Action Plan was based on immediate, short term and long term actions. Participants decided that some action items would be reported immediately to municipal officials. Other priority items would become short term projects. Still other priorities became part of the group's long term goals. (See the matrix on the following page for a summary of the consensus made at this meeting.) The group plans to fully implement the action plan in the next two to three years. Many of the short term projects are part of the process for achieving the long term goals.



IMPLEMENTATION OF THE ACTION PLAN

Because of the strong presence of municipal officials and board members at the action planning meeting, many of the reporting items were addressed in the weeks immediately following the meeting. Steering committee members began work to compile the final report of the survey's results and to create an implementation strategy.

Acknowledgments: This project has been financed with Federal Funds from the Environmental Protection Agency (EPA) to the Massachusetts Department of Environmental Protection (the Department) under an s. 319 Nonpoint Source competitive grant. The contents do not necessarily reflect the views and policies of EPA or of the Department. This document is modeled on an Adopt-a-Stream case study of the Hop Brook Stream Team's Shoreline Survey.

LAKE/WATERSHED STEWARDSHIP PROGRAM

ACTION PLANNING MATRIX: Mill Brook Watershed (Indian Lake & Salisbury Pond)

I. Reporting Problems to Officials. *From their priority items, the group determined which items must be reported. Because these are seen as problems that directly threaten the lake or its tributaries, reporting to appropriate local or state agencies is usually a first step. Excerpts of their plan include the following problems reported:*

To the Conservation Commission

- a) Disturbed land with poor erosion controls at a new construction site.
- b) Clogged stormdrains at shopping centers, trash entering feeder streams.
- c) Clear-cutting of trees adjacent to a wetland area (potentially a vernal pool).

To the Department of Public Works

- a) Clogged catch basins found in many sections– full list of catch basins found clogged presented to DPW
- b) List of streets and parking lots around city park's access road & parking lots that require sweeping.

To the Mayor's Office

- Four abandoned vehicles stored on conservation land.

To the City Council:

- Presentation of this action plan with a complete final report of this survey.

II. Short Term Projects. *From the group's priority list, they plan some short term projects that can be accomplished with a few months of work. For some groups, these projects can be the first step of their long-term action and involve people immediately in watershed protection. Excerpts from their short term projects include:*

1. Protect Open Space

- a) 8 acres of open space are slated for development. Work with owners to either save as open space or encourage watershed-friendly development, including the use of erosion controls, vegetated buffers and other BMPs.
- b) Prepare a recommendation to city boards that steep, undeveloped areas of land in Dodge Park / Greendale area be saved as open space.

2. Education

Initiate education programs for residents and businesses in the watershed with information on watershed-friendly property maintenance and improvements, including topics such as vegetative buffers, composting, nonpoint source pollution, native plants, and lawn care issues.

3. Improve Water Quality

Water quality monitoring sampling sites: Test for nutrients below dam at Ararat Brook.

III. Long Term Action. *These activities can be the glue that holds a group together. They are the major issues on which a group chooses to focus. Excerpts from their long term actions include:*

1. Reduce Sedimentation

Excessive sedimentation is one of the major problems in the watershed; control over this sedimentation is a high priority for the stewardship team. Both the Mill Brook Task Force and the Indian Lake Watershed Association have applied separately for grant money to install sediment removal devices in catch basins draining to Salisbury Pond and Indian Lake, respectively. To adequately control sediment runoff, however, will require a longer effort including improved stormwater management, elimination of erosion problems, increased vegetated buffers around water bodies, and other protection and restoration projects. Two specific actions towards this goal include:

- **Unpaved Roads-** Reduction of sediments from private unpaved streets in the watershed.
- **Kiver Pond** - Study Kiver Pond to reduce sedimentation and maintain / improve habitat, and create a management plan. Implement management plan on Kiver Pond

2. Improve Water Quality

Improve water quality in Indian Lake, Mill Brook, Salisbury Pond, and the contributing streams and ponds in the watershed. Work towards this goal is ongoing: examples include the Blackstone Headwaters Monitoring Program (volunteer water quality monitoring) and the DPW's efforts to improve stormwater management and complete separation of sewer and stormwater systems. Continue watchdog efforts (visual observations, reporting), applying for grants, short term projects, and water quality monitoring where appropriate. On Indian Lake, replace old, undersized culverts with larger ones to improve flow and water quality. Continue support for the ILWA and the MBTF and their projects, such as the 319 Nonpoint Source projects for which they have applied. Continue and build on the partnerships among watershed associations, and the partnerships have with municipal officials and state agencies.